

Appl. No. 10/657,603
Amdt. dated 1/19/05
Reply to Office action of 10/21/0410

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-17 are in the application. Claims 1 and 5 have been amended. Dependent claim 17 has been added.

Claim 17 depends from claim 5 and recites that the second AC voltage is independent from the first AC voltage. Support for this feature can be found on page 7, lines 13-24 and page 9, lines 1-22 of the instant specification.

Claims 1 and 5 have been amended to clarify the limitations relating to the first and the second applied AC voltages. Support for the changes is found on page 4, lines 4-12 of the instant specification.

In item 2 on page 2 of the above-identified Office Action, claims 1-3, 5-7, 9-11, and 13-15 have been rejected as being anticipated by Setlak et al. (WO 98/52157) (hereinafter "Setlak") under 35 U.S.C. § 102(b).

Applicants note that while the Examiner has applied Setlak et al. WO 98/52157 in the rejection of the claims, the Examiner has not specifically cited the Setlak et al reference in the

"Notice of References Cited" Form PTO-892, although it is duly-noted that Setlak et al. is based on U.S. 6,259,804, which is listed in PTO-892.

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and, therefore, the claims have not been amended, except as noted above for clarification and cosmetic reasons; the amendments are not made to overcome the references.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful. Claim 1 calls for, *inter alia*, a fingerprint sensor, having:

a plurality of sensor electrodes mounted below a contact surface; and

at least one protective electrode mounted on or in the contact surface, the protective electrode incompletely covering the plurality of sensor electrodes;

the plurality of sensor electrodes having a first AC voltage being applied at a prescribed frequency;

the protective electrode having a second AC voltage being substantially applied at the prescribed frequency;

the second AC voltage having an amplitude being greater than a supply voltage for the fingerprint sensor.

Setlak discloses a fingerprint sensor. The fingerprint sensor has a plurality of sensor electrodes 78 as shown for example in Figs. 2 and 12. The fingerprint sensor also has protective electrodes 80. An AC voltage is applied to a finger 79 placed on a sensor electrode 78 by an excitation drive amplifier 74. The signals generated at the sensor electrode 78 by the excitation caused by the finger 79 are measured using the circuit shown in Fig. 12. For this purpose, the signals are amplified by an amplifier 73. The amplified signals are applied to the protective electrode 80 as well as a bank of A/D converters 180. The range of the A/D converters 180 is set by the voltages V_{REF} and V_{OFFSET} (cf. page 13, lines 16-18).

The Examiner erroneously believes that the voltage V_{OFFSET} with a settable range can provide an amplitude at the protective electrode 80 greater than the supply voltage V_{REF} . This is incorrect because the voltages V_{OFFSET} and V_{REF} only set the input range and thus the sensitivity of the A/D converters 180, which detect the signals of the sensor electrode 78. The

voltages V_{OFFSET} and V_{REF} do not set the voltage at the sensor electrode 78 or the voltage at the protective electrode 80. In fact, the amplitude at the protective electrode 80 is set by the amplifier 73. Therefore, it is not at all apparent from Setlak that an amplitude is applied to the protective electrode 80 that is greater than a supply voltage for the fingerprint sensor.

Clearly, Setlak does not show "the second AC voltage having an amplitude being greater than a supply voltage for the fingerprint sensor" as recited in claim 1 of the instant application. Claim 9 contains a similar limitation.

Regarding independent claim 5, Setlak does not disclose or suggest that the phase of the AC voltage applied to the protective electrode 80 is settable. This phase is determined by the phase of the AC voltage applied to the sensor electrode 78 and the phase shift caused by the amplifier 73. Setting the phase of the AC voltage applied to the protective electrode 80 can only be carried out by setting the AC voltage applied to the sensor electrode 78 and not independently thereof.

Setlak does not show "the first AC voltage having a settable phase and the second AC voltage having a settable phase"

(emphasis added) as recited in claim 5 of the instant application. Claim 13 contains a similar limitation.

Moreover, Setlack does not show that "the second AC voltage applied to said protective electrode is **independent** of the first AC voltage applied to said sensor electrodes" (emphasis added) as set forth in new dependent claim 17.

In item 4 on page 4 of the above-identified Office Action, claims 4, 8, 12, and 16 have been rejected as being unpatentable over Setlak and further in view of Kramer (U.S. 6,512,381) under 35 U.S.C. § 103(a).

The foregoing discussion of Setlak is equally applicable in this rejection.

Kramer does not overcome the deficiencies of Setlak.

In Kramer, the Examiner believes that equation (5) in column 6 shows that the sensitivity of a fingerprint sensor can be improved by setting the amplitude and/or the phase of the AC voltage applied to the protective electrode. Applicants disagree with the Examiner's contention. Moreover, the Examiner's contention is unsubstantiated because equation (5) only defines the sensitivity of a fingerprint sensor as

derived from the output signals of a sensor electrode.

Equation (5) does not suggest that the AC voltage applied to the protective electrode contributes to the sensitivity of the fingerprint sensor.

Clearly, the reference does not show "setting at least one of the amplitude of the second AC voltage and a phase of the second AC voltage such that a sensitivity of the fingerprint sensor assumes a maximum value and the sensitivity is determined by a local resolution of the fingerprint sensor" as recited in claim 4 of the instant application. Claims 8, 12, and 16 contain similar limitations.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1, 5, 9, 13, or 16. Claims 1, 5, 9, 13, and 16 are, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claim 1, 5, 9, or 13. Additionally, the references do not show the feature of dependent claim 17.

In view of the foregoing, reconsideration and allowance of claims 1-17 are solicited.

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In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made.

Please charge any other fees that might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,



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FDP/bb

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